

Application No.: 09/941,546

Docket No.: M4065.0422/P422

REMARKS

Claims 1-79, 113-131, and 141-152 are pending in this application. The Applicant acknowledges with appreciation the allowance of claims 1-79, 113-123, and 141-150. Claims 124 and 126 have been amended. No new matter has been added.

The drawings are objected to under 37 CFR 1.83(a) for failing to show every feature of the invention specified in the claims. Specifically, the Office Action notes that “the phrase ‘said first, second, and third doped regions having a substantially different depth in said substrate’ must be shown in Fig. 12 or the feature(s) canceled from the claim(s).” (Office action at 2; emphasis in original). A proposed drawing correction has been submitted for Fig. 12 showing these features. Withdrawal of this objection is respectfully requested.

Figure 14 is objected to because “the numeral ‘131b’ for reset gate electrode should be ‘132b.’” (Office Action at 2). Proposed drawing corrections have been submitted as suggested by the Examiner. Withdrawal of this objection is respectfully requested.

The specification is objected to “because of the following informalities: The numeral ‘p-well 60’ should be ‘p-well 160’ line 8 on page 18.” (Office Action at 3). The specification has been amended to correct this informality. The specification has also been amended to correct a typographical error. No substantive changes have been made to the specification. Withdrawal of this objection is respectfully requested.

Claim 126 stands objected to “because of the following informalities: the phrase ‘said first, second and third color wavelength components are red, green and blue, respectively’ is misdescriptive because the second and third color wavelength components are blue and green, respectively.” (Office Action at 3). Claim 126 has been amended to correct this informality. Withdrawal of this objection is respectfully requested.

Claims 124-131 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Kubo et al., U.S. Patent No. 3,860,956 (“Kubo”). This rejection is respectfully

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traversed.

The present invention relates to an imager having improved color pixel sensor cells. As such, amended independent claim 124 recites a "color imaging sensor" comprising *inter alia* "a substrate having a first defined region for sensing a first color wavelength component; a second defined region for sensing a second color wavelength component; and a third defined region for sensing a third color wavelength component." Amended independent claim 124 further recites that "the lower boundaries of each of said first, second and third defined regions are located at respective different depths from a surface of said substrate and are displaced laterally such that said defined regions do not overlap, and wherein at least one of said regions is a retrograde well doped to a first conductivity type."

Kubo relates to a target for a color image pick-up tube that does not use a color filter. (Col. 1, lines 4-5). As such, Kubo discloses photo-electric conversion elements sensitive to any one of red, green, and blue components of incident light. Kubo teaches three regions in a substrate which are sensitive to red, green, and blue light, respectively, wherein each of the regions has a different depth. (Col. 4, lines 44-46).

Kubo does not disclose the limitations of amended independent claim 124. As noted above, Kubo discloses three separate regions in a substrate for sensing red, green, and blue light, respectively, wherein each of the regions has a different depth. (Col. 4, lines 44-46). Kubo teaches forming the regions of an epitaxial layer which is doped to a p-type or an n-type conductivity. (Col. 4, lines 34-38). However, Kubo is silent about "at least one of said regions is a retrograde well doped to a first conductivity type," as recited by amended independent claim 124. Since Kubo fails to disclose all of the limitations of amended independent claim 124, withdrawal of this rejection is respectfully requested.

Claims 151-152 stand rejected under 35 U.S.C. § 103 as being unpatentable over Kubo in view of Tsuei et al., U.S. Patent No. 5,945,722 ("Tsuei"). This rejection is respectfully traversed.

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Tsuei relates to a color active pixel sensor cell having an oxide filter. (Col. 1, lines 6-8). According to Tsuei, an active pixel sensor cell is formed with a plurality of spaced-apart regions of a second conductivity type formed in a substrate. Tsuei further discloses oxide layers of different thicknesses formed over the regions of a second conductivity type for reducing "the number of to-be-passed photons which are attenuated by conventional dyed resin filters." (Col. 3, lines 21-25).

The subject matter of claims 151 and 152 would not have been obvious over Kubo in view of Tsuei. Specifically, the Office Action fails to establish a *prima facie* case of obviousness. Courts have generally recognized that a showing of a *prima facie* case of obviousness necessitates three requirements: (i) some suggestion or motivation, either in the references themselves or in the knowledge of a person of ordinary skill in the art, to modify the reference or combine the reference teachings; (ii) a reasonable expectation of success; and (iii) the prior art references must teach or suggest all claim limitations. See e.g., In re Dembiczak, 175 F.3d 994, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999); In re Rouffet, 149 F.3d 1350, 1355, 47 U.S.P.Q.2d 1453, 1456 (Fed. Cir. 1998); Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573, 37 U.S.P.Q.2d 1626, 1630 (Fed. Cir. 1996).

Neither Kubo nor Tsuei, whether considered alone or in combination, teach or suggest the limitations of claims 151 and 152. As noted above, Kubo does not teach or suggest that "at least one of said regions is a retrograde well doped to a first conductivity type," as recited in amended independent claim 124, from which claims 151 and 152 depend. Likewise, Tsuei does not teach or suggest "a retrograde well doped to a first conductivity type," much less that "the lower boundaries of each of said first, second and third defined regions are located at respective different depths from a surface of said substrate and are displaced laterally such that said defined regions do not overlap, and wherein at least one of said regions is a retrograde well doped to a first conductivity type," as recited in amended independent claim 124. For at least these reasons, the Office Action fails to establish a *prima facie* case of obviousness and withdrawal of the rejection of claims 151 and 152 is respectfully requested.

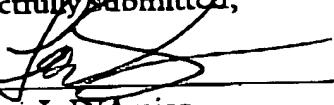
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In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

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Respectfully submitted,

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